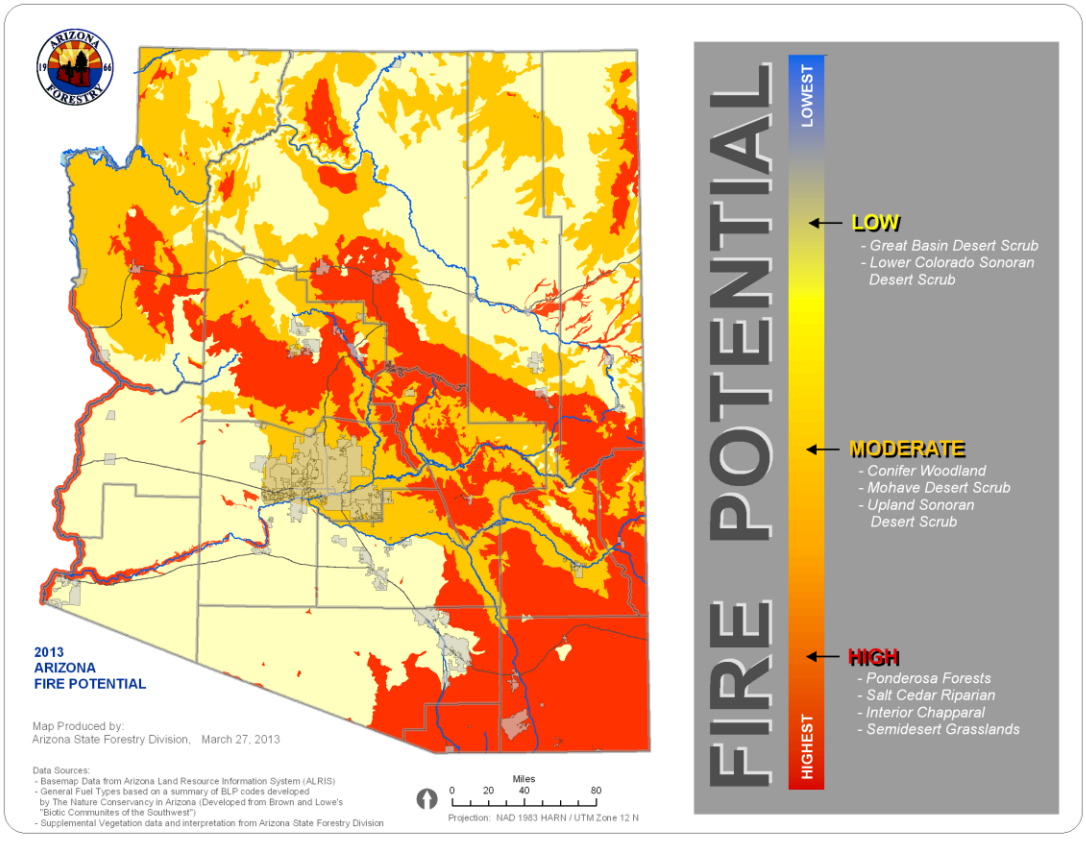
# 2013 Arizona Fire Season Outlook
# Arizona State Forestry Division
# March 28, 2013

Statewide General Fire Season Forecast

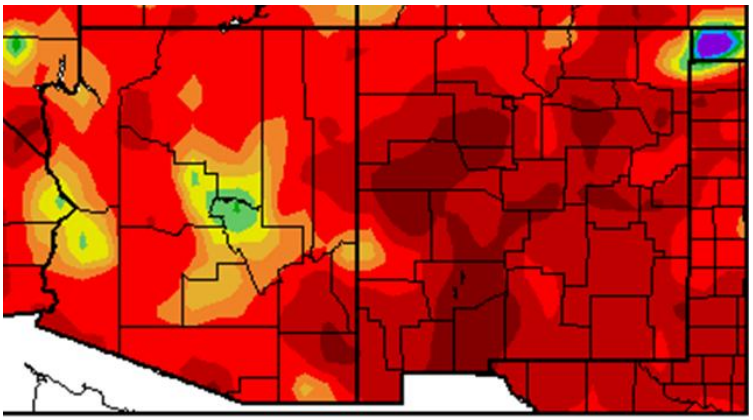
Similar to last year's fire season, the concern for higher wildfire potential will generally be above our 3000 foot elevations, in the perennial grasslands, chaparral brush types, and our pine forests. Sonoran Deserts in Maricopa, Pinal, and Yavapai Counties may show a moderate increase in fire potential this year as compared to the last few years due to a slight increase in annual grass production. March snows have pushed off the start of fire season in the higher elevations by a few weeks, but remaining snowpack is rapidly diminishing. Any further precipitation received this spring will be helpful in delaying the start of fire season, but current National Climate Center predictions show below average precipitation probabilities for April.



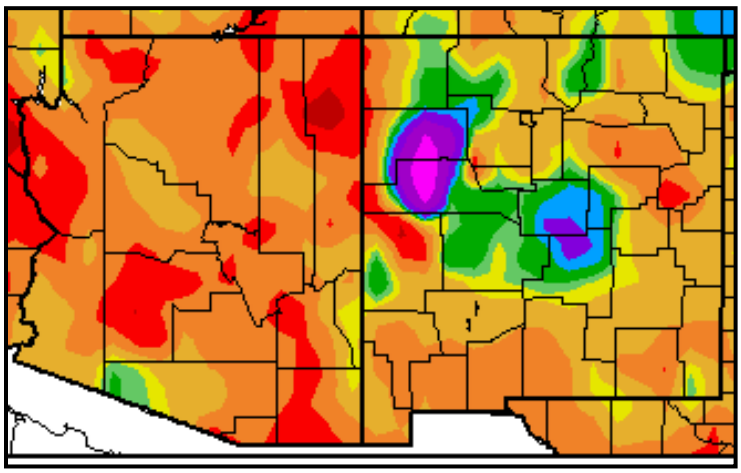

2013 Arizona Fire Potential Map

2012/2013 Fall, Winter, and Spring Weather

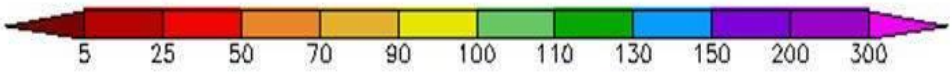
A statewide drought still continues, with water year precipitation showing below 70% of average for much of Arizona for the period of October 2012 through March 2013. February and March precipitation did slightly alleviate conditions, particularly with some additional snowpack to the higher elevations forests in Coconino, Gila, Navajo, and Yavapai Counties. Below are the 2013 vs. 2012 precipitation comparisons showing 2013 to be an overall drier water year than 2012, except in a few areas in central Arizona.



2013 Water Year
% of Average Precipitation 10/1/12 to 3/26/13



2012 Water Year
% of Average Precipitation Oct 1, 2011 to 4/1/12

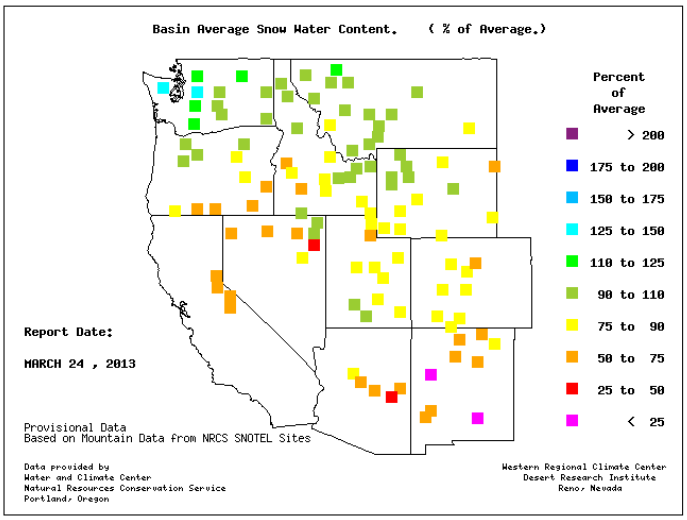



Percent of Average Precipitation
Legend

Snowpack

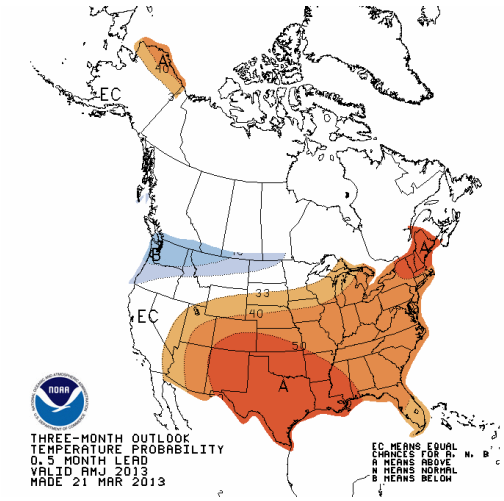
Below is Arizona's Snow Water Content Map showing an average 25 to 90% of normal. Snowpack affects wildfires by providing moisture to both living and dead vegetation. Below average snowpacks are often attributed to earlier and more severe fire seasons in our higher elevations.

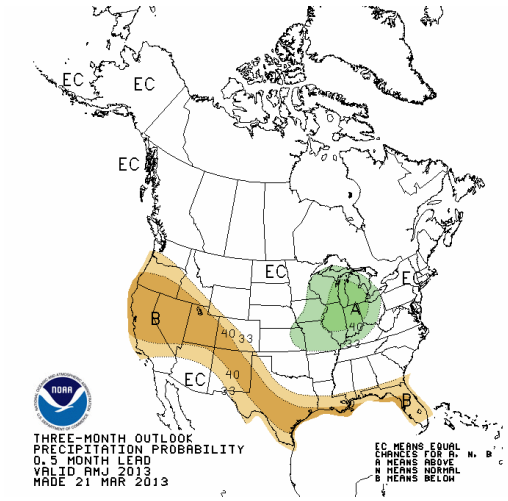
**SNOTEL - River Basin Snow Water Content**



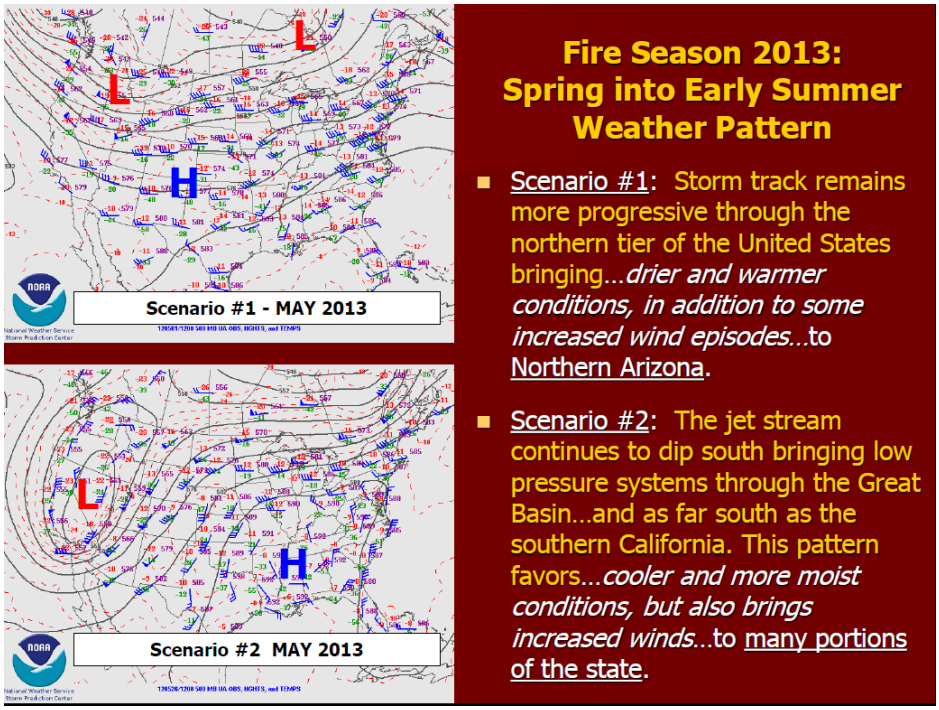

Spring through Summer Weather Outlook

The National Weather Service Climate Prediction Center's three month forecasts for temperature and precipitation (see graphics below) show above average probabilities for hotter conditions, and equal chance probabilities for either above or below average precipitation.



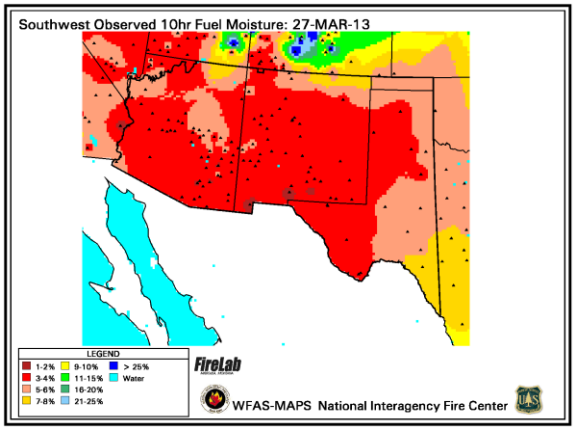
The National Weather Service has forecasted two fire season weather scenarios for Arizona's 2013 fire season (see graphic below). Both scenarios have some concern for firefighters as they both indicate potential high wind episodes. The historic fire season of 2011 with over one million acres burned was attributed to similar high wind events.

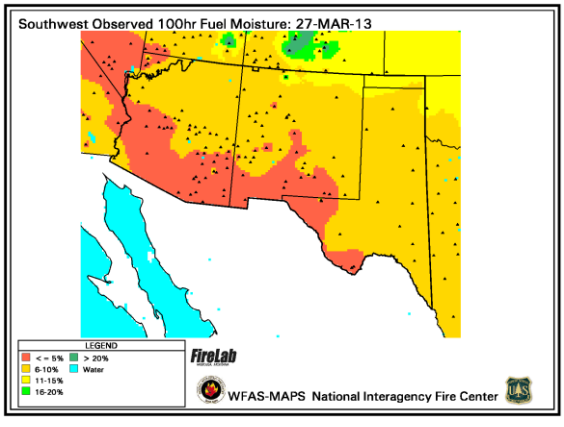



*Source: Valerie Myers, Phoenix NWS Incident Meteorologis*

## Fuel Moistures

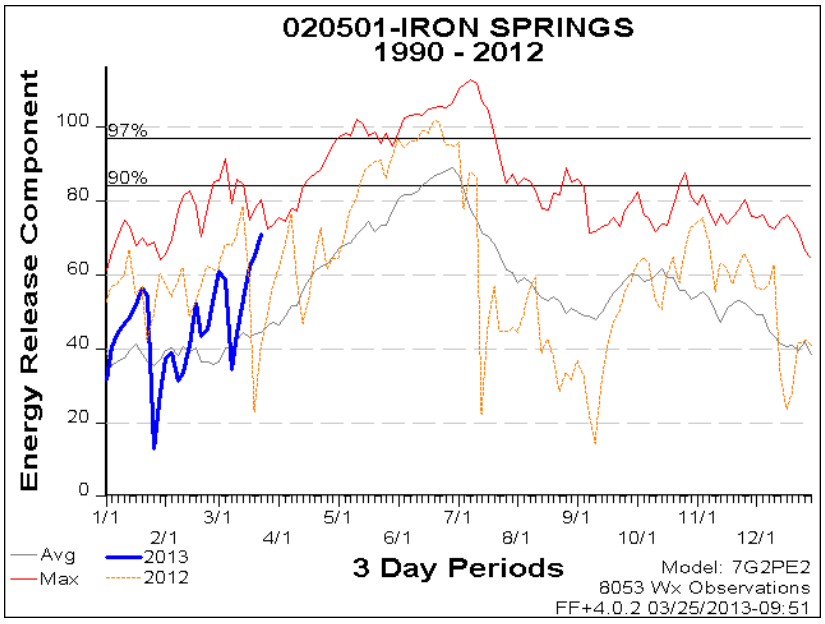
Dead vegetation fuel moistures are beginning to show single digit percentages that indicate vegetation is very receptive to ignition and spread. Below are two charts that show moisture content of our 10 hour fuels (1/4" to 1" diameter sticks) and 100 hour fuels (1" to 3" diameter sticks). These are based on actual readings from fire weather stations located in Arizona.

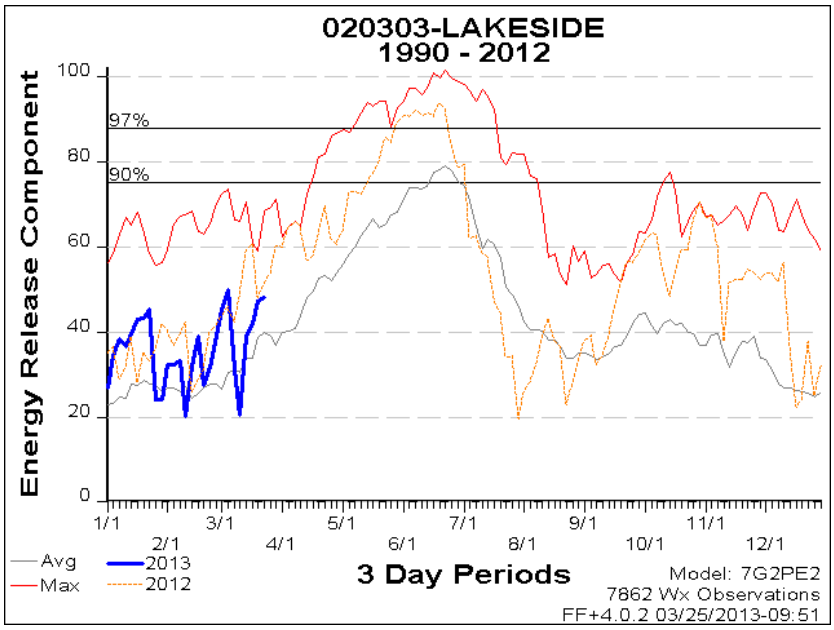


Energy Release Component

The Energy Release Component (ERC) is a fire model based on the estimated potential available energy released per unit area in the flaming front of a fire. The day-to-day variations of the ERC are caused by changes in the moisture contents of the various fuel classes, including the 1,000 hour ( 3" to 8") class. The ERC is derived from predictions of (1) the rate of heat release per unit area during flaming combustion and (2) the duration of flaming. Below are two ERC charts, one for Ironsprings near Prescott and the other for the Lakeside area in the White Mountains. Both these charts show Arizona is currently above average, with a steep trend upwards towards maximum. Many of our catastrophic fires occur when levels approach or surpass the 90% percentile mark.



# District Forester Reports on Fuel Conditions and Fire Potential

**Flagstaff District**
**Mohave, Coconino, Apache, and Navajo Counties**
**Wildland Fuel Assessment**
**Kevin Boness, District Forester**

Overall the fire season on the Flagstaff District should be average for the number of fires and the acreage. Recent snowfall and rain across the District have pushed back the expected start of fire season and have lowered the potential for extreme fire behavior for the immediate future. Moisture levels have been lower in the White Mountains and this may indicate an earlier start to the fire season in that area than in the Flagstaff area. April moisture levels will be a better indicator of what to expect for the start and severity of the season. The recent precipitation has increased the fuel moistures but with normal spring winds and persistent high daytime temperatures, fuel moistures will drop rapidly and will once again contribute to the potential for possible extreme fire behavior on days when winds are high. The western part of the District (Mohave County) may see some larger fire development due to fuels that grew as a response to last year's monsoon and remain in place. We have yet to see any green up over much of the district (it is too early in the year for green up) and this could change the nature of the fire season depending on the quantity and location of the fuels.

**Mohave County:** Mohave County is expected have a moderate to high potential for an active fire season. New growth has been minimal to date and may not contribute to potential for fire spread. The higher elevations that are of greatest concern for the state (Hualapai Mtns.) have received near normal precipitation but persistent drought continues. If no more precipitation occurs this spring, there is an early potential for wildfires. There are still significant areas in lower elevations that have accumulated fuels from the past few years and may contribute to an increased fire potential as well. The Colorado River corridor with its tamarisk riparian vegetation will continue to have a high risk to wildfire but this is a constant factor and does not depend as much on winter moisture but more on human caused ignitions and high temperatures.

**Coconino County:** The recent snow and rain was fairly widespread and was of a significant amount to delay the start of fire season and dampen the possibility of extreme fire behavior, at least in near term. New spring growth has not occurred and generally is not a significant factor in contributing to the spread of wildfires but there are areas of remnant fuels from last year as well as the constant factor of pine needles that maintain a threat of rapid spread especially on windy days. We will call for a high potential for fires, particularly with the current long term spring/summer forecast of low precipitation high temperatures, and windy conditions.

**Apache and Navajo Counties:** It is too early to tell the level of new spring growth that will occur in these counties. These counties received less moisture during the winter than the Flagstaff area and slightly lag behind the Flagstaff area in spring moisture. This might indicate an earlier start and a more severe fire season than in the Flagstaff area. As in every year spring winds will play a major role in the drying of fuels and potential growth of any new starts. The high elevation grasslands adjacent to the communities of Eagar and Springerville have a high potential for large fires.


Mohave County, grass filling in under PJ as a result of 2012 monsoons.

**Phoenix District Report**
**Maricopa, Yuma, La Paz, Yavapai, Gila, and Pinal (No. of Gila River) Counties**
**Wildland Fuel Assessment**
**Jim Downey, District Forester**

## General District Overview:

Moderate winter precipitation and oscillating temperatures did not establish the necessary snowpack to alleviate the drought conditions from the previous years. Spring precipitation has pulsed into the state enough to provide a fine carpet of grass and forbs in the Sonoran Desert and a thicker carpet of grass in the upper foothills. Green up in Yavapai and Gila Counties has just started. Current live green fuel moistures in the chaparral type are showing approximately the same readings as last year, and still below normal.

Fire potential is greatest in the forested and chaparral fuel types in Yavapai and Gila Counties due to sustained drought conditions affecting live fuel moistures. Fuels in the Sonoran Desert are expected to provide a minimal to average level of fire activity. District wide, fire season severity is expected to be similar to 2012 with more small fires in the desert and uplands.

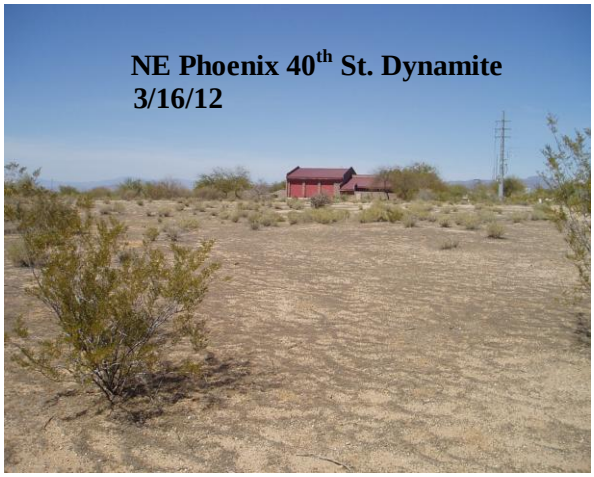
## Maricopa County:

The majority of the county has an moderate potential for wildfires. The areas of most potential will be desert washes, north slopes, and road right-of-ways where moisture regimes may have produced more fine fuel loadings to carry fire.

The tamarisk vegetation that occurs along the Salt and Gila Rivers is predicted to have high fire potential. Some expanses of the Gila River near Buckeye/Robbins Butte could sustain large fires.








**Pinal County (North of the Gila River):** Above 3000 feet elevation within the Dripping Springs area sufficient moisture was received to produce enough grass that fires will carry once the fuels dry out. The chaparral fuel type should have moderate to high fire potential due to the extended drought. The lower elevations of Pinal County will be much like Maricopa County this year, with average fire potential in the Sonoran Desert areas. Examples of these areas are Apache Junction, Queen Valley, Queen Creek, and Superior.

The tamarisk in the Gila River corridors from Winkleman to just east of Florence is expected to have high fire potential. Annuals growing next to the river could provide increased potential for ignitions that spread to the salt cedar fuels. Good rain in the Kearney area has also produced annual and perennial grasses. Expect fine fuel continuity to carry fires up slope and allow for fires to move beyond the river bottom.

**Florence Junction, Pinal County**
**3/14/13**

**Florence Junction**
**4/21/12 (different location)**

**Yavapai County:**

The pine type above 5000 feet in elevation in and around the Prescott Basin and on Mingus Mountain is predicted to have an above moderate to high fire potential. Winter snowpack was very limited throughout the County.

The chaparral vegetation type on State lands in areas around Prescott, Yarnell, Mayer, and Bagdad is expected to have a below average live fuel moisture that will lead to high fire potential. Many of the chaparral stands are older with a high dead/live ratio that may prove resistant to control efforts due to the low live fuel moistures. Seasonal new fine fuel growth has been delayed due to the dry winter & late seasonal moisture.

Temperatures and ground moistures have just started the green up/growth of seasonal grasses. Grass loading is expected to be average in the perennial grasslands areas in the 3000 to 5000 foot elevations near Cordes Junction, Mayer, Prescott Valley, Chino Valley, Verde Valley, and Peeples Valley. Fire potential is predicted to be moderate to high in these areas.

Low to moderate fire potential is predicted below 3500 feet level in the Sonoran Desert areas such as Black Canyon City, Congress and Wickenburg. The annual grass/weed production is limited, but higher than 2012. The brush component will have lower levels of fuel moisture content, increasing fire intensity. Fires occurring in washes, road right-of-ways, and north slopes should be at normal levels. Growth potential is moderate as some areas may have a lack of continuous fuels.

**Gila County:**

Similar to the Prescott area, the pine type at 5000 ft. and above in elevation in and around the Mogollon rim is predicted to have high fire potential. Winter snowpack was lacking throughout the higher elevations of the County. The chaparral type on State lands south of Globe will be similar to Yavapai County – expect high fire potential.

Areas above 3500 feet are expected to have a high potential due to higher grass loading and fuel continuity in perennial and annual grass/weed production. Low live fuel moistures may cause the brush component to be troublesome where continuity is evident. These areas would include Tonto Basin around Roosevelt Lake and Dripping Springs in the southern tip of the county. The previous two years have provided frost kill in the scrub oak type. This frost kill is still showing in the vegetation and elevates fire start potential and contributes to the growth of new fires..

Expect troublesome fire behavior and larger fires in the mid elevations on the Tonto National Forest.

**Yuma County**: Expect low potential in most of Yuma County, except for the river corridors that includes the Gila River between Yuma and Dateland, and Colorado River from Yuma to Martinez Lake, where fire potential will be high due to the tamarisk riparian fuels. Annual and perennial grasses outside the river corridors are limited in distribution and continuity.

**La Paz County:** Like Yuma County expect low fire potential with limited annual and perennial growth in the southern regions around Ehrenberg and Quartzsite. The northern region around Parker may have enough fine fuels to carry fire in a few areas. Some Sonoran Desert regions near Wenden may have enough annuals growing to carry fire. High fire potential can be expected for tamarisk vegetation along the Colorado River.

**Tucson District**
**Cochise, Graham, Greenlee, Pima,**
**Pinal (South of Gila River), and Santa Cruz Counties**
**Wildland Fuel Assessment**
**Gene Beaudoin, District Forester**

Within the Tucson Basin in Pima the fuels are sparse. The picture below on the left depicts most of the areas in and around the Tucson Metropolitan area. The picture on the right is that of the fuels within washes in that same area. Most areas from the 3000 foot elevation level and lower are typical of these types of fuels. This is also the same type of fuels we have seen in the Eloy, Casa Grande, and Picacho areas.

Wilmot Rd South of Interstate 10.

The right-of-ways along I-19 contain buffel grass from Tucson all the way to Nogales. In the I-19 Corridor around Green Valley we start to see a more continuous fine fuel bed.

I-19 Corridor/Green Valley showing buffel grass in ROW

As the elevation gains around Tubac the fine fuels appears to have unbroken continuity, with the exception of roadways and washes, from the Santa Cruz River up into the foothills of the mountain ranges – see photos below.

I-19 Corridor/Tubac showing continuous fine fuels except where roads or washes provide limited fire breaks.

The pictures below exhibit what we are seeing around southern Arizona in the 3000 – 6000 foot elevation in the mesquite grasslands and oak woodlands. Generally continuous grass fuels.

Northeast of Nogales Airport on Highway 82

In Santa Cruz County an area of concern is located south of Patagonia. This is along Hwy 82 in the San Jose de Sonoita Land Grant. Fine fuels are 2-3 foot high. The area also contains dead and down mesquite, oak, graythorn, and cottonwoods. Should a fire start in this area with typical SW winds, the fire could pose threat to Patagonia. See representative photos below.

Highway 82, 1 Mile South of Patagonia

In Cochise County from the 3000 – 6000 foot elevations we are seeing continuous fine fuels. Most of which are 1-2 foot high, but in some areas can be 4-5 feet high and ready to burn. See photos below.

Cochise County – Palominas and Hereford showing very tall continuous perennial grass

These previous photos in the southern part of the Tucson District are exhibiting what we are seeing throughout all the counties in Tucson District in from southern Pinal County to

the Mexico border, to the New Mexico line. At 3000 feet and lower there are fine fuels from past years but with broken continuity that will lower fire potential. There is some green-up showing, but in many areas the recent cold weather has slowed the green-up.

At 3000 – 6000 feet a continuous bed of remnant fine fuels from past season with little green-up this year. What is greening up seems to be the short fluff grasses and mustard grasses. There is however, some mesquite and oak exhibiting freeze kill in areas which could produce more severe wildfires. For State jurisdiction fires, we believe this 3000 to 6000 elevation range will have the highest fire potential.

At 6000 feet and above which is primarily federal land in Tucson District, the snowpack is rapidly dissipating. We expect the upper elevations of the Sky Islands Mountain to have high fire potential as fuels dry further into May.